6 Assessment and Mitigation Planning

6.1 Initial Planning

The discovery of interior sources of PCBs prompted a site meeting with EPA Region 1 Coordinator to discuss next steps in planning process and potential occupancy of school in September 2011. The meeting on site was attended by EnviroScience, EPA, WCS Superintendent, WPSC representatives, and Pinck representatives to discuss potential mitigation efforts and develop a conceptual assessment and mitigation plan. The site meeting occurred on July 14, 2011.

EPA suggestions based on the identified sources was to conduct several tests of indoor air by isolating select PCB Bulk Product materials to determine which materials were producing indoor air concentrations. EPA was of the opinion that based on the concentrations identified and the magnitude of materials within the building occupancy in September 2011 was unlikely and alternative space should be identified by the WCS.

The target concentration for PCBs in indoor air in the building which contained PCB levels above EPA posted "Public Health Levels for PCBs in School Indoor Air" was reduction to levels below the guidelines applicable to the lowest student age group of 300 ng/m^3 for indoor air that occupy the building.

The plan consisted of the following components:

- Identify alternative locations for student population and teachers for school year 2011/2012.
- Complete a comprehensive review of the ventilation system for the building and take measures to increase ventilation to optimal performance and clean existing ventilation systems.
- Inspect fluorescent light fixtures/ballast in the building. Upon inspection, any ballast's not labeled as "No PCB" were to be removed and replaced with new ballast's by a licensed electrician. In addition, any metal housings or plastic light covers with apparent staining from PCB ballast oil were removed and replaced with new components.
- Conduct a pilot project within select representative rooms having the conditions identified on both upper and lower levels of the building. The locations included rooms 212, 264, 110 and 164. Elements to be included in the pilot project were to include the following:
    - Conduct base-line sampling within each room to serve as a pilot room. Sampling included collection of indoor air samples and wipe samples.
    - Clean furniture and all room surfaces using HEPA vacuums and wet wipe cleaning methods.
    - Clean and balance existing unit ventilation systems within rooms to be used as pilot and run systems for a minimum period of 24 hours.
    - Upon completion conduct wipe sampling to confirm PCB concentrations have been reduced to below $\leq$1 µg/100 cm^2.
    - Repeat air sampling for indoor air to document any variation based on just cleaning and optimized ventilation of the rooms.
    - Conduct specific removal of identified PCB Bulk Product materials within specified locations to include complete removal of "tectum" ceilings, removal of mastic adhesives and felt to 90%, and removal of exterior caulking at window locations adjacent to unit ventilator intakes (typically) one or two windows only. Additional materials removed as appropriate based on presence included interior caulking at columns in room 264 and filler foam within room 164.

7 Conduct Pilot Project

The purpose of the pilot project was to evaluate various mitigation efforts that could effectively reduce the indoor air concentrations of PCBs within the classrooms to below the EPA guidance level of 300 ng/m^3. The pilot test was designed to be implemented in a phased approach to determine which specific mitigation activities could be undertaken to achieve the project goal.

The pilot project work was conducted by Triumvirate Environmental Inc. (Triumvirate) utilizing Commonwealth of Massachusetts state contract through the Operational Services Division (OSD). The pilot project included an action plan in several representative rooms of the building to physically remove materials to better understand the feasibility of conducting the work, associated time and cost to complete and identify, with post removal air samples, the effectiveness of raising indoor air quality to acceptable ranges. Work began upon receipt of an e-mail notification on July 21, 2011 to EPA Region 1 Coordinator of planned PCB Bulk Product Removal which did not require a formal plan submission. The mastic/felt above "tectum" was also determined to contain asbestos and required a waiver from the Massachusetts Department of Environmental Protection (MassDEP) and the Department of Labor Standards (DLS) formerly known as the Division of Occupational Safety (DOS) to allow the removal of asbestos mastic. A waiver was granted by Mr. Andrew Cooney of MassDEP and subsequently from Gary Gaspar of DLS.

A detailed description of pilot process is provided and the time frame for completion included the following:

- 7-21 clean room contents and hard surfaces within rooms (Triumvirate)
- 7-22 HVAC contractor and balancer cleaned, reviewed and balanced unit ventilators (Triumvirate)
- 7-22 Take wipes on hard surfaces after cleaned (base-line) (EnviroScience)
- 7-22 to 7-23 run HVAC systems for a minimum of 24 hours
- 7-23 collect base-line post cleaning and balancing air and wipe samples (EnviroScience)
- 7-23 once initial samples collected begin set-up of containment (Triumvirate)
- 7-23 to 7-25 remove source materials (Triumvirate)
- 7-26 collect multiple post removal air samples (including variation of conditions such as some carpets were isolated and covered with poly sheeting and then run again uncovered). Samples collected by (EnviroScience)
- 7-28 to 8-2 air and wipe results received from lab (Con-test)

Results of pilot determined the effectiveness of reducing indoor air concentrations by removing the identified interior sources of PCBs and limited removal of exterior caulking materials around windows beneath unit ventilator intake points. Indoor air sample results identified post removal indoor air concentrations to be close to or lower than 300 ng/m3.

7.1 Pre-Cleaning

The furniture, exposed horizontal surfaces and other items within the open area of the classrooms were cleaned utilizing wet wipe wash (water and Simple Green™). If observable dust was present, the items were initially cleaned utilizing HEPA vacuum. Once cleaned, the items were moved from the room. The items were staged in separate areas identified by classroom number for ease in identification. Two surfaces within the rooms were sampled in accordance with EPA recommendations. Hexane was used as the organic solvent in this procedure.

The samples were analyzed for PCB utilizing EPA Method 3540C for extraction and EPA Method 8082 for sample analysis. The results were compared to the EPA guideline for the cleanup of PCBs on surfaces in schools of ≤1 ug/100 cm². Refer to Table 8 for a summary of pre-cleaning wipe sample results conducted as baseline for the pilot rooms. The laboratory analysis results are presented in ***Appendix H.***

TABLE 8
Sampling and Analysis Results for Pre-Cleaning Pilot PCB Wipe Samples
July 22, 2011

SAMPLED LOCATION	OBJECT	SAMPLE NO.	PCB CONTENT (µg/wipe)
Room 212	Unit Vent	722RM-W-01	0.85 (Aroclor 1254)
Room 212	Counter	722RM-W-02	1.1 (Aroclor 1254)
Room 212	Unit Vent	722RM-W-03	0.66 (Aroclor 1254)
Room 264	Counter	722RM-W-04	1.6 (Aroclor 1254)
Room 264	Table	722RM-W-05	1.2 (Aroclor 1254)
Room 164	Table	722RM-W-06	0.23 (Aroclor 1254)
Room 164	Bookshelf	722RM-W-07	0.29 (Aroclor 1254)
Room 110	Counter	722RM-W-08	0.031 (Aroclor 1254)
Room 110	Counter	722RM-W-09	0.18 (Aroclor 1254)
Blank	Blank	722RM-W-10	0.0 (Aroclor 1254)

As the majority of the teaching materials, i.e. books, paper and other supplies, were stored in closed cabinets these items were boxed and made available to the respective teachers. Any visually observed dust was removed from these teaching materials via wet wipe or HEPA vacuum (in general, minimal dust was observed on these materials).

Following the cleaning and removal of furnishings, surfaces within the rooms were cleaned utilizing combination of HEPA vacuum and wet wiping methods. Rooms were thoroughly cleaned including cleaning of all horizontal surfaces within the room, working from the top portions of the room to the floor, using HEPA vacuum and wet wiping methods. The objective of the initial cleaning was to remove accumulated visible dust which remained in the room following furniture/teaching materials cleaning and removal.

7.2 HVAC Balance and Cleaning

Upon completion of pre-cleaning within the rooms to be used for pilot project, the unit ventilators were cleaned and balanced by an HVAC specialist, retained by Triumvirate, to ensure their proper operation and to optimize the amount of fresh air intake for the units. Three of the rooms for the pilot including rooms 110, 164 and 212 consisted of unit ventilators with shared direct exterior vents located in the soffit area between upper and lower levels of the building. The unit ventilators for rooms 110 and 164 were mounted on ceiling surfaces on perimeter wall. The unit ventilator in room 212 was floor mounted. The HVAC system in room 264 included an internal ceiling mounted unit ventilation system with fresh air intake located on the roof.

Once the HVAC specialist completed work it was determined that unit ventilators were providing approximately 50% fresh air make-up as the intake for the classrooms. The systems were operated for a period of 24 hours prior to conducting indoor air sampling.

7.3 Baseline Air and Wipe Samples

One indoor air sample was collected from each pilot room location as well as one in an adjacent room for a total of eight air samples after cleaning and balancing of HVAC systems and running for a period of 24 hours. The samples were to identify baseline concentrations prior to conducting removal of PCB Bulk Products during pilot project. PCB indoor air samples were collected on July 23, 2011 in accordance with EPA Method TO-10A. Sufficient sample volume of 1,000 L of air was collected on sample media to achieve a limit of detection of 0.01ng/m^3 by homolog analysis. QA/QC samples, including one duplicate and one blank, were also obtained. The samples were collected following EPA Method TO-10A procedures using low flow air sampling pumps and polyurethane foam traps (PUF tubes), over a duration of approximately 200 minutes at flow rates of approximately 4-5 liters per minute.

During the indoor air sampling, conditions that are typically present within the school when the students are present, (E.g. doors closed, unit ventilators and other HVAC systems in operation) were observed. The samples were submitted for PCB homolog analysis (modified 8270C) to Con-test Analytical Laboratory in East Long Meadow, MA.

TABLE 9
Pilot Project Baseline Air Sampling and Analysis Results for PCB Indoor Air Samples
July 23, 2011

SAMPLED LOCATION	MATERIAL TYPE	SAMPLE NO.	PCB CONTENT (ng/m^3)
Room 212	**Indoor Air Sample**	**723-JAC-A-01**	**840**
Room 212 (duplicate)	**Indoor Air Sample**	**723-JAC-A-02**	**780**
Cafeteria	**Indoor Air Sample**	**723-JAC-A-03**	**1,000**
Room 264	**Indoor Air Sample**	**723-JAC-A-04**	**1,000**
Room 268	**Indoor Air Sample**	**723-JAC-A-05**	**820**
Room 164	Indoor Air Sample	723-JAC-A-06	160
Room 163	**Indoor Air Sample**	**723-JAC-A-07**	**540**
Room 110	**Indoor Air Sample**	**723-JAC-A-08**	**540**
Room 108	**Indoor Air Sample**	**723-JAC-A-09**	**620**
Blank	Indoor Air Sample	723-JAC-A-10	ND

Note: Results in bold text in Table 9 meet or exceed EPA indoor air advisory concentration of 300 ng/m^3 for ages 6 to <12years of age.ND –None Detected

Refer to ***Appendix I*** for laboratory analysis results.

Wipe samples were also taken again after the unit vents had been run for 24 hours after cleaning and after the air samples had been run as to not affect them.

TABLE 10
Sampling and Analysis Results for Pre-Cleaning Pilot PCB Wipe Samples
July 23, 2011

SAMPLED LOCATION	OBJECT	SAMPLE NO.	PCB CONTENT (µg/wipe)
Room 212	Unit Vent	723JAC-W-01	0.91 (Aroclor 1254)
Room 212	Counter	723JAC-W-02	0.69 (Aroclor 1254)
Room 212	Unit Vent	723JAC-W-03	0.27 (Aroclor 1254)
Room 264	Counter	723JAC-W-04	0.88 (Aroclor 1254)
Room 264	Table	723JAC-W-05	0.29 (Aroclor 1254)
Room 164	Table	723JAC-W-06	0.27 (Aroclor 1254)
Room 164	Bookshelf	723JAC-W-07	0.13 (Aroclor 1254)
Room 110	Counter	723JAC-W-08	0.13 (Aroclor 1254)
Room 110	Counter	723JAC-W-09	0.063 (Aroclor 1254)
Blank	Blank	723JAC-W-10	0 (Aroclor 1254)

Refer to ***Appendix J*** for laboratory analysis results.

7.4 Conduct Pilot Removal Selective PCB Bulk Products

Upon collection of the baseline indoor air samples from the pilot room locations, Triumvirate crews began preparation of containment for the removal of the PCB Bulk Product materials within each location. The detailed work performed included the following:

- Prior to Testing, Unit Ventilators (UV) were cleaned in Rooms to be used as Pilot including Rooms 110, 164, 212 and 264 on July 22, 2011.
- Within the same locations, UVs were balanced by HVAC sub-contractor.
- Entire Rooms including Rooms 110, 164, 212 and 264 were cleaned by wet wiping and HEPA vacuuming.
- Once complete EnviroScience collected dust wipe samples from 2 representative surfaces. July 22, 2011.
- UVs were run continuously for 24 hours from July 22 to July 23, 2011.
- Wipe samples were collected again directly adjacent to initial tests after 24 hours on July 23, 2011.
- We began air samples using Method TO-10A within each room after the 24 hour period of running UV units. July 23, 2011.
- Upon completion of source removal or isolation work, we collected air samples for PCB analysis using Method TO-10A. Results are included in Table 1. Table 2 is a comparison of three sets of air data points from June 7, 2011, July 23, 2011 and June 27, 2011.

The pilot project included the following removal or isolation methods for various known or potential source materials:

Room 164 - Removal of an estimated 840 SF of "tectum" ceiling panels, removal of 95% of black mastic/felt from concrete ceiling, removal hampered due to condition of concrete ceiling and ceiling was encapsulated to allow asbestos clearance with Fiberlock bridging encapsulant.

Room 164 – Removal of 72 LF of caulking from first floor level window units (3 total) located on either side of air intake of Room 164 unit ventilator unit. Installation of Silicone sealant in place of old material.
Room 164 – Foam filler at columns and beams located in room were not removed.
Room 212 – Removal of 860 SF "tectum" ceiling panels, removal of 95% of black mastic/felt from concrete ceiling, removal hampered due to condition of concrete ceiling and ceiling was encapsulated to allow asbestos clearance with Fiberlock bridging encapsulant.
Room 212 – Removal of 24 LF of caulking from first floor level window unit located below air intake of Room 212 UV unit. Installation of Silicone sealant in place of old material.
Room 212 – Removal of 20 LF foam filler at 1 column located in room.
Room 264 – Removal of 40 LF of interior column caulking at 2 columns.
Room 264 – isolation of half the area of room where carpet was covered with 2 layers of 6-mil polyethylene sheeting. Room 264 is 980 SF. Air sample run on each half of the room divided by two layers of 4-mil polyethylene sheeting. Note each room included a column where caulking was removed. Note unit ventilator unit was not located on exterior perimeter wall and air intake is on roof so no window caulking was removed. The "tectum" ceiling panels were initially not removed from this location prior to air sampling.
Room 110 – No work performed due to difficulty in removing "tectum" ceiling mastic and plans for work were abandoned to focus on completion of three rooms.

7.5 Post Removal Air and Wipe Samples

Upon completion of pilot project removal work, an initial air test for asbestos was performed utilizing Transmission Electron Microscopy (TEM) due to the presence of asbestos in both ceiling mastic and caulking materials. Once completed air samples were also collected for PCB utilizing EPA Method TO-10A.

TABLE 11
Sampling and Analysis Results for Post Removal PCB Air Samples Collected During Pilot Project July 27, 2011

SAMPLED LOCATION	SAMPLE TYPE	SAMPLE NO.	PCB CONTENT (ng/m^3)
Room 264 (Pilot Room) – uncovered carpet	**Air Sample – TO-10A PCB Homologues**	**727JH-A-01**	**480**
Room 264 (Pilot Room) – covered carpet	**Air Sample – TO-10A PCB Homologues**	**727JH-A-02**	**420**
Room 212 (Pilot Room)	Air Sample – TO-10A PCB Homologues	727JH-A-03	280
Room 164 (Pilot Room)	Air Sample – TO-10A PCB Homologues	727JH-A-04	61

Note: Results in bold text in Table 11 meet or exceed EPA indoor air advisory concentration of 300 ng/m^3 for ages 6 to <12years of age.

ND –None Detected

Average temperature range for samples was 84.9 degrees, and ambient pressure was 29.8 inches mercury.

Refer to ***Appendix K*** for laboratory analysis results.

Once the airs were run, additional wipe samples were taken on surfaces in the rooms.

TABLE 12
Sampling and Analysis Results for Post Removal Pilot PCB Wipe Samples
July 27, 2011

SAMPLED LOCATION	OBJECT	SAMPLE NO.	PCB CONTENT (µg/wipe)
Room 264	Counter	727JH-W-01	0.0 (Aroclor 1254)
Room 264	Desk	727JH-W-02	0.91 (Aroclor 1254)
Room 212	Unit Vent	727JH-W-03	0.37 (Aroclor 1254)
Room 212	Counter	727JH-W-04	0.71 (Aroclor 1254)
Room 164	**Sill**	**727JH-W-05**	**7.8 (Aroclor 1254)**
Room 164	Counter	727JH-W-06	0.0 (Aroclor 1254)

Note: Results in bold text in Table 12 exceed proposed clean-up standard for "high occupancy" school use building for wipe ≤1 µg/100 cm². This room was re-cleaned.

Refer to ***Appendix L*** for laboratory analysis results.

TABLE 13
Results Comparison for June 7, 2011 Initial Sampling to July 23, 2001 Base-line Sampling for Pilot Project, and Results post Pilot Project in select locations collected on July 27, 2011

SAMPLED LOCATION	SAMPLE TYPE	Results for June 7 (ng/m³)	Results for July 23 (ng/m³)	Results for July 27 (ng/m³)
Room 212 (Pilot Room)	Air Sample – TO-10A PCB Homologues	940	840	280
Room 212 (Pilot Room) – Duplicate Sample	Air Sample – TO-10A PCB Homologues	940	780	N/A
Room 264 (Pilot Room) – covered carpet	**Air Sample – TO-10A PCB Homologues**	**990**	**1,000**	**420**
Room 264 (Pilot Room) – uncovered carpet	**Air Sample – TO-10A PCB Homologues**	**990**	**1,000**	**480**
Room 164 (Pilot Room)	Air Sample – TO-10A PCB Homologues	170	160	61

SAMPLED LOCATION	SAMPLE TYPE	Results for June 7 (ng/m³)	Results for July 23 (ng/m³)	Results for July 27 (ng/m³)
Room 164 (Pilot Room)	Air Sample – TO-10A PCB Homologues	240 (prior duplicate sample)	160	61

Note: Results in bold text in Table 10 meet or exceed EPA indoor air advisory concentration of 300 ng/m³ for ages 6 to <12years of age.

ND –None Detected

The findings indicated most considerable change in room 212 from 840 ng/m³ to 280 ng/m³ as a difference of 560 ng/m³. The results in room 264 did not show a significant difference between carpeted floor being isolated or not isolated. The difference in the concentrations from July 23 to July 27th with the removal of the interior caulking at columns within Room 264 was also significant at a difference of 520 ng/m³. It should be noted that the result is still over 300 ng/m³ and in this location the "tectum" ceiling and mastic was not removed. It should also be noted that the samples were collected during the late evening to early morning hours when temperatures were lower in general both indoors and outdoors. To confirm the results observed in Room 212, Room 264 was placed under containment and the "tectum and mastic totaling 980 SF was removed and encapsulated similarly to work performed in rooms 212 and 164.

A single indoor air sample was collected in Room 264 on August 5, 2011 upon completion of "tectum" ceiling and mastic/felt. Result decreased further to 320 ng/m³.

Results of pilot determined the effectiveness of reducing indoor air concentrations by removing the identified interior sources of PCBs and limited removal of exterior caulking materials around windows beneath unit ventilator intake points. Indoor air sample results identified post removal indoor air concentrations to be close to or lower than 300 ng/m^3.

A special meeting of the Permanent School Committee was held to identify the results of pilot project and discuss anticipated costs for replication of process throughout the school building on August 2, 2011. Budget costs were prepared by Triumvirate. The meeting prompted a request to obtain a second quote in order to ensure costs were competitive. A proposal package was prepared and site walk through planned to allow both Triumvirate as the original pilot project Contractor and a second vendor being LVI Environmental Services, Inc. (LVI) to provide comparative quote for the work. A copy of the document prepared to obtain quotes which serves as the scope of the project is included in Appendices.

8 Development of Plan for Replicating Pilot Project for Removal or Interim Measures Identified Bulk Product Material

8.1 Special Meetings

A special meeting of the WPSC was held to identify the results of pilot project and discuss anticipated costs for replication of process throughout the school building on August 2, 2011. Budget costs were prepared by Triumvirate. The meeting prompted a request to obtain a second quote in order to ensure costs were competitive. A proposal package was prepared and site walk through planned to allow both Triumvirate as

the original pilot project Contractor and a second vendor being LVI Environmental Services, Inc. (LVI) to provide comparative quote for the work. A copy of the document prepared to obtain quotes which serves as the scope of the project is included in ***Appendix M.***

A meeting was held on August 11, 2011 with EPA Region 1 Coordinator and WPSC to discuss the plans to move forward with source removal of identified PCB Bulk Product materials. EPA Region 1 Coordinator confirms no formal submission of a plan is required but requests the project documentation be provided during the course of work to ensure they are made aware of the results of activities. Caution is offered by EPA Region 1 Coordinator that this process is only the first step with only goal of potentially occupying building in September 2011 and that long range plans and goals for continued monitoring and eventual elimination of all PCB Bulk Product Materials and addressing adjacent PCB Remediation Wastes must be developed by WCS.

A plan was developed as part of documents prepared to obtained quotes and submitted to Ms. Kimberly Tisa on August 10, 2011 by e-mail.

8.2 Plan for Removal

PCB ABATEMENT REQUIREMENTS

PCB Decontamination and Bulk Product Waste Removal

1. Conduct detailed cleaning of all unit ventilation systems including both wall and ceiling units within entire school facility. Note interior unit ventilators with air intakes on roof shall include cleaning duct work from roof top to unit.
2. All unit ventilation systems shall be adjusted and balanced by a mechanical sub-contractor for optimum ventilation within entire school facility.
3. Decontaminate interior non-porous materials throughout school building utilizing methods of decontamination consistent with EPA and MADPH requirements. The work shall include the use of HEPA vacuum and wet wiping to remove all visible dust. Existing dust concentrations exceed EPA guidance of 1 microgram per 100 square centimeters (ug/100 cm^2) for a school facility. Surfaces shall be cleaned and sampling to confirm cleanliness shall be performed. Results of wipe samples collected must be below 1 ug/100 cm^2. For porous items (eg papers, books etc., these items shall be HEPA vacuumed and placed in storage containers to be provided by Westport Community Schools. Each container shall be labeled with location of items for proper storage.
4. Remove existing exterior caulking at all ground floor windows located below a unit ventilation system air intake and those within 10 feet of an air intake unit. It is estimated that this will require removal of approximately 2,000 LF of caulking. Caulking contains PCBs >50 ppm and asbestos. Materials will be properly disposed and area of caulking removal cleaned. Once cleaned install new silicone caulking to re-seal joints. Provide backer rods as necessary.
5. Remove existing interior caulking at all interior columns, doors and expansion joints. It is estimated that this will require removal of approximately 1,500 LF of caulking. Caulking contains PCBs >50 ppm and asbestos. Materials will be properly disposed and area of caulking removal cleaned. Once caulking has been removed, clean the adjacent surfaces and coat with two parts Sikagard 62 or equivalent heavy – build colored epoxy coatings. Coating shall be applied by brush to cover entire surface of prior caulking joint and minimum of ½ inch either side of joint. Product shall be installed with two contrasting colors so initial layer can be observed if wear of top coating occurs. Install new silicone caulking to re-seal joints. Provide backer rods as necessary.
6. Remove existing tectum ceilings located just below concrete floor or ceiling (not in grid). Material

removal will result in some removal of PCB containing mastic. Mastic contains PCBs >50 ppm PCB and asbestos. It is estimated that this will require removal of approximately 70,000 SF of tectum panels and associated mastic adhesive/felt. Remaining mastic shall be scraped to the extent possible to remove not less than 90% of all accessible material utilizing hand scraping and then clean all surfaces. Entire concrete ceiling and remaining mastic shall be encapsulated with a bridging encapsulant due to the presence of asbestos. Where mechanical equipment and above top of walls, prevents removal of the tectum and mastic, the materials will be left in place and also coated with the bridging encapsulant to seal edges.

7. Remove interior carpeting in all locations including cleaning of mastic to facilitate installation of new flooring consisting of VCT. Westport Community Schools to provide product requirements for replacement materials.
8. Interior work areas shall be cleaned to meet asbestos final visual inspection criteria of no visible dust. A post removal inspection shall be performed and work areas shall be required to meet final air clearance sampling in accordance with AHERA regulations by Transmission Electron Microscopy (TEM).
9. All wastes generated shall be disposed of as Bulk Product Waste> 50 ppm which also contains asbestos. Note segregation of interior non asbestos caulking at interior columns is at the discretion of the contractor.

PCB Bulk Product Waste Removal – Alternates

1. Remove all existing exterior caulking at all windows and doors at all remaining locations. It is estimated that this will require removal of approximately 3,500 LF of caulking. Caulking contains PCBs >50 ppm and asbestos. Materials will be properly disposed and area of caulking removal cleaned. Once cleaned install new silicone caulking to re-seal joints. Provide backer rods as necessary.
2. Conduct interim measures to coat existing interior window glazing compound with 2 coats of epoxy coating. Products to include Sikagard 62 or equivalent heavy –build colored epoxy coatings. Product shall be installed with two contrasting colors so initial layer can be observed if wear of top coating occurs. It is estimated that there are 240 window systems with glazing compounds to be included.
3. Remove existing interior foam filler at all interior columns and beams. It is estimated that this will require removal of approximately 12,000 LF of foam filler. Materials contain PCBs >50 ppm. Materials will be properly disposed and area removal cleaned. Once cleaned install new compressible filler to re-seal joints.
4. All wastes generated shall be disposed of as Bulk Product Waste> 50 ppm which also contains asbestos where noted. Note segregation of interior non asbestos foam filler at interior columns and beams is at the discretion of the contractor.

9 Conduct Bulk Product Removal and Interim Measures Throughout Entire Building

9.1 Project Objectives

The project was conducted for the removal of polychlorinated biphenyl PCB-containing materials with equal to or greater than 50 parts per million (ppm) PCB as PCB Bulk Product Waste. These material included all those materials identified within the building. It should be noted that the site was not fully inspected for the presence of PCBs and only the materials listed within this report were identified and tested for PCBs. The primary objective of the work is to reduce the indoor air concentrations to within EPA advisory concentration of 300 ng/m^3 for children ages 6 to 12 and 450 ng/m^3 for faculty and staff at 19 plus years (adults) in the school. The project included the decontamination of all interior non-porous items utilizing EPA and the Massachusetts Department of Public Health (MADPH) suggested protocols for cleaning surfaces contaminated with PCBs.

9.2 Removal Project

The project to begin removal of interior and exterior identified PCB source materials as PCB Bulk Product Waste began on August 11, 2011. The selected Contractor was Triumvirate. Triumvirate utilized as sub-contractors Dec-Tam Corporation (Dec-tam) as well as LVI Services (LVI) to assist with the project to maintain goal of opening school on September 6, 2011. The scope of work included the complete removal of all accessible interior "tectum" ceiling panels and the majority of associated asbestos and PCB-containing mastic/felt on concrete ceiling deck. Work also included complete removal of all PCB-containing interior caulking, all interior PCB-containing foam filler, and removal of all exterior PCB-containing window caulking. PCB-containing caulking was removed from interior and exterior door systems to the height of the doors. Interior PCB-containing window glazing compound could not be removed and will need to be part of a future window replacement project, so as an interim measure work included encapsulation of the caulking. Initial phases of work included a thorough cleaning of the exterior of all room furnishings utilizing HEPA vacuums and wet wiping to clean potentially PCB laden dust. Once clean, wipe samples from representative locations were collected and furniture was tagged and moved to gymnasium or exterior storage trailer by a moving company. Locations of carpeting were removed where present with the exception of office areas and media center offices. Once rooms were emptied, a full negative pressure enclosure was established in accordance with requirements of 453 CMR 6.00 for asbestos removal. Tectum and associated mastic adhesives were removed from all classrooms and where located, program spaces such as the cafeteria and media center. Once completed, areas were final cleaned and ceilings encapsulated with an asbestos encapsulant and final air clearance samples by Transmission Electron Microscopy (TEM) were collected on rush turnaround. Once final air clearance was achieved for asbestos, the work area barriers (wall polyethylene sheeting) were partially removed to facilitate access to interior PCB materials which did not contain asbestos. These materials included interior foam filler, interior caulking, and interior window glazing compound. These materials were then removed with the exception of interior window glazing which was encapsulated as an interim measure with a new layer of caulking to conceal the glazing compound. Original intent was to utilize Sikagard to encapsulate, but it would not adhere to glass surfaces without etching which was beyond the scope of the work. For caulking locations and foam filler locations, once bulk\product materials were removed, Sikagard, encapsulant was installed in joint prior to re-caulking as an interim measure as recommended by the EPA Region 1 Coordinator.

While interior work was occurring, workers removed all of the exterior PCB containing caulking at windows and lower accessible portions of the door systems. Containment barriers included use of polyethylene sheeting on interior side of windows and door systems and covering of ground surfaces and unit vent intakes. Workers wore appropriate personal protective equipment. Exterior caulking materials also contained asbestos and required acceptable visual inspection by licensed asbestos project monitors prior to re-caulking of joints. See **Appendix N** for copies of Asbestos Project Monitor Licenses. See ***Appendix O*** for copies of the Final Visual Inspection Certifications. See ***Appendix P*** for Copies of the Site Logs. See **Appendix Q** for copies of the Contractor Sign-In Logs. See ***Appendix R*** for copies of the Daily Monitoring Sheets. See ***Appendix S*** for copies of the Background Air Sheets.

Upon completion of work to remove or encapsulate source materials, work areas were thoroughly cleaned and representative wipe samples for PCB were collected within each room on non-porous floor and porous window sills. HVAC systems were cleaned and balanced and run for a period of 12 hours in addition to

continued ventilation with HEPA equipped negative air filtration devices. Post removal indoor air samples were collected for analysis using Method TO-10A Homolog analysis. Samples were collected in all classrooms and function spaces. Work was conducted in phases as each work area was completed.

9.3 Site Preparation and Controls

The work was performed in accordance with the work plan prepared by EnviroScience.
Prior to initiating PCB Removal the following site controls were implemented.

1. Remediation Contractor prepared a Health & Safety Plan (HASP) developed specific to the site and work activities to be performed. All workers followed applicable federal and state regulation with regard to work activities, including but not limited to OSHA regulation including personal protection and respiratory protection requirements.
2. During all remediation activities, Contractor maintained control of all entrances and exits to the project site to ensure only authorized personnel enter the work areas and are afforded proper personal protective equipment and as required respiratory protection.
3. Work zones were established to include abatement zone, decontamination zone, and support zone
4. The Support zone included parking lot areas adjacent to the building and loading dock area adjacent to Kitchen.
5. The Contractor placed waste containers on exterior paved surface in rear parking area and fenced off the parking area where dumpsters were stored.
6. Appropriate PCB waste containers were lined, covered and secured. The PCB waste containers were properly marked once loaded as described in 40 CFR part 761.40 and 761.45.
7. The decontamination zones included the corridors which run parallel to the work areas. The floor surface within the decontamination zone were completely covered with a single layer of 6-mil polyethylene sheeting.
8. Warning signs were posted in accordance with 29 CFR 19 10.1200 at all approaches to the work area. Asbestos warning signs were also posted in accordance with 29 CFR 1926.1101. Signs were conspicuously posted to permit a person to read signs and take precautionary measures to avoid exposure to PCBs or other Toxic or Hazardous Substances. The signs included the PCB ML markers at each entrance to the work area.
9. The Contractor established contiguous to each work area, a decontamination enclosure consisting of equipment room, shower room, and clean room in series. The only access between contaminated and uncontaminated areas was through this decontamination enclosure. The Contractor ensured that employees enter and exit the Abatement Zone through the decontamination area.
10. The equipment room was supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective equipment.
11. Shower facilities were provided which complied with 29 CFR 1910.141(d)(3) and 29 CFR 1926.1101 for asbestos. The showers were in series between both the equipment room and the clean room.
12. The clean room was equipped with a locker or appropriate storage container for each worker's use. Following showering, each worker changed into street clothing in clean change areas.

Work Area Protection Abatement Zone

The work performed included the removal of asbestos containing materials requiring full containment within a negative pressure enclosure meeting requirements of DLS. The Abatement zone or regulated area included the following:

1. Posted warning signs in accordance with 29 CFR 1910.1200 and 29 CFR 1926.1101 at all approaches to the work area. Signs shall be conspicuously posted to permit a person to read signs and take precautionary measures to avoid exposure to PCBs or other Toxic or Hazardous Substances. These signs included the PCB ML markers at each entrance to the work area.
2. Isolation barriers were installed as critical barriers at interior side of all window and door systems to isolate the abatement zone from areas outside of proposed work to prevent release of asbestos or PCB dust, debris or liquids. Protection included two layers of 6-mil polyethylene sheeting securely affixed to the inside finish surfaces to isolate window or door systems.
3. Isolation barriers were installed on interior wall surfaces within the abatement zone to minimize dispersal of dust and debris. Protection included two layers of 4-mil polyethylene sheeting securely affixed to the interior finish surfaces.
4. To minimize dust and debris negative pressure filtration devices were utilized to provide a negative pressure enclosure. The use of negative air filtration units with HEPA filtration established a minimum of 4 air changes per hour within the work area. The design parameter for static pressure differential between the inside and outside of enclosures was in a range from 0.02 to 0.10 inches of water gauge, depending on conditions.
5. All zones inside the enclosure shall have less pressure than the ambient pressure outside of the enclosure (-0.02 inches water gauge differential).
6. All other openings to the building interior such as unit ventilation, ducts, grills were securely sealed with a two layers of 6-mil polyethylene sheeting from the building interior.
7. Isolation barriers remained in place throughout work to prevent migration of any dust, debris or liquids resulting from PCB Bulk Product Waste and asbestos removal.
8. All debris generated during operations was HEPA vacuumed continuously throughout the work shift and at the end of a work shift to avoid accumulation. Any tears or rips that occurred in isolation barriers were repaired or removed and replaced with new.
9. All equipment utilized to perform cutting, or demolition was equipped with appropriate dust collection systems.
10. All surfaces adjacent to materials removed were properly decontaminated (cleaned) upon completing the removal of PCB Bulk Product Waste and asbestos.

9.4 Remediation Methods

The work was performed to meet the objectives identified in section 9.1 Project Objectives in accordance with 40 CFR Part 761. The remediation was performed to ensure compliance with EPA Toxic Substance Control Act (TSCA) requirements and protect both public health and the environment. Materials classified as PCB Bulk Product Waste also contain asbestos and were properly removed and disposed in compliance with federal and state regulatory requirements of the MassDEP and DLS agencies.

The abatement activities performed by the Remediation Contractor included the following:

1. Site preparation and controls to facilitate remediation of PCBs and asbestos.
2. Health and Safety in accordance with Occupation Safety and Health Administration (OSJ{A) requirements.
3. Recordkeeping and distribution as required in accordance with 40 CFR part 761.125 (c)(5).
4. Performance of selective demolition to remove "tectum" ceiling panels to facilitate removal of mastic/felt at concrete ceiling. Note "tectum" contained less than 50 ppm but due to the presence of mastic adhesive on "tectum" waste was disposed of as containing >50 ppm PCB.
5. Work was performed upon setup of required containment prior to conducting removal.
6. PCB Bulk Product Waste was removed and properly disposed in accordance with 40 CFR Part 761.62.

PCB ABATEMENT PERFORMED

PCB Decontamination and Bulk Product Waste Removal

1. The Contractor conducted detailed cleaning of all unit ventilation systems including both wall and ceiling units within entire school facility. Note interior unit ventilators with air intakes on roof included cleaning duct work from roof top to unit.
2. All unit ventilation systems were adjusted and balanced by a mechanical subcontractor for optimum ventilation within entire school facility.
3. The Contractor decontaminated interior non-porous materials throughout school building utilizing methods of decontamination consistent with EPA and MADPH requirements. The work included the use of HEPA vacuum and wet wiping to remove all visible dust. Pre-existing dust concentrations exceeded EPA guidance of 1 microgram per 100 square centimeters (ug/100 cm^2) for a school facility.
4. Surfaces were cleaned and sampling to confirm cleanliness was performed by EnviroScience and included 4 representative wipe samples per room. Results of wipe samples collected were required to be below 1 ug/l00 cm^2. For porous items (E.g. papers, books etc., these items were HEPA vacuumed and placed in storage containers to be provided by WCS.
5. Each container and furnishings were labeled with location of items for proper storage and moving company retained by WCS placed in central location in the gymnasium or storage trailers outside of the building to allow for PCB Bulk Product removal work to be conducted.
6. The Contractor removed existing exterior caulking at all windows, expansion joints and door systems. Note door systems removal was limited to height of doors only. Removal included approximately 6,000 LF of caulking. Caulking contained PCBs >50 ppm and asbestos and any backer rod material was also removed as PCB Contaminated waste.
7. Materials were properly disposed and area of caulking removal cleaned. Once cleaned the contractor installed new silicone caulking to reseal joints, providing backer rods as necessary.
8. The Contractor removed existing interior caulking at all interior columns, doors and expansion joints. The removal included approximately 2,500 LF of interior caulking. Caulking contained PCBs >50 ppm and asbestos. Materials were properly disposed and area of caulking removal cleaned. Once cleaned Contractor provided an encapsulant to seal masonry on both sides of joint as an interim measure. The encapsulation included 2 coats of epoxy coating. Product utilized was Sikagard 62 epoxy coatings. Product was installed with two contrasting colors so initial layer could be observed if wear of top coating occurs. Upon completion the Contractor installed new silicone caulking to reseal joints providing backer rods as necessary.

9. The Contractor removed existing "tectum" ceilings located just below concrete floor or ceiling (not in grid). Material removal resulted in some removal of PCB containing mastic which was on the surface of "tectum" panels. Mastic contained PCBs >50 ppm PCB and asbestos. It is estimated that approximately 70,000 SF of "tectum" panels were removed.
10. Upon complete removal of all "tectum" the ceilings were scraped to remove associated mastic adhesive/felt. Remaining mastic was scraped to the extent possible to remove up to 95% of the materials and then cleaned. Use of mechanical chipping guns was employed to assist with the removal work within containment.
11. Once complete removal to the extent possible was conducted a visual inspection was performed by EnviroScience to ensure sufficient material was removed.
12. The entire ceilings and portion of exposed concrete beams and remaining mastic was encapsulated with a bridging encapsulant due to the presence of asbestos.
13. Where mechanical equipment and above tope of walls, prevented removal of the "tectum" and mastic, the materials were left in place and encapsulant utilized to seal.
14. The Contractor remove interior carpeting in all locations including cleaning of mastic to facilitate installation of new flooring consisting of VCT. WCS provided product requirements for replacement materials and retained flooring sub-contractor
15. Interior work areas where materials also contained asbestos were cleaned to meet asbestos final visual inspection criteria of no visible dust. A post removal inspection was performed by an EnviroScience licensed asbestos project monitor and work areas were required to first meet final air clearance sampling in accordance with AHERA regulations by Transmission Electron Microscopy (TEM) analysis. See ***Appendix T*** for the TEM analytical results.
16. The Contractor also conducted interim measures which included coat existing interior window glazing compound with new caulking to seal the materials. The original intent was to encapsulate materials with Sikagard 62 or equivalent epoxy coatings. It was determined during work that the encapsulant would not bond to glass without etching of glass. Decision was made to utilize caulking in lieu of the originally proposed encapsulant.
17. The Contractor removed existing interior foam filler at all interior columns and beams. It is estimated that approximately 12,000 LF of foam filler was removed. Materials removed contained PCBs >50 ppm. Materials will were properly disposed and area of removal cleaned. Once cleaned the contractor provided encapsulant and install new caulking to re-seal joints.
18. Post testing was performed for PCBs including indoor air samples from each classroom or program space and an additional two dust wipe samples were collected on representative floor surfaces. This testing was performed sequentially as containment areas were completed by EnviroScience's on site project monitors. If any results exceeded clearance objectives for indoor air or wipes, the areas were re-cleaned and use of negative air filtration devices was continued to work as air scrubbing devices. Areas were re-sampled which did not meet clearance objectives.
19. All wastes generated were disposed of as Bulk Product Waste> 50 ppm which also contained asbestos. PCB Bulk Product Waste were removed and transported off-site for disposal at a permitted hazardous waste landfill which is an EPA, TSCA approved facility for PCB waste 50 ppm.
20. Materials containing <50 ppm were transported to a non-hazardous solid waste disposal Facility and was limited to carpeting removed from floors of select rooms only.

9.5 Decontamination and Cleaning Methods

The Contractor was responsible for complete cleaning and decontamination of the Abatement Zone upon completion of work. The Abatement Zones were required to meet proposed Verification Sampling limits established in the Project Objectives.

The Remediation Contractor utilized HEPA vacuum and wet cleaning products to remove all visible dust and debris from all surfaces within the work area. Cleaning methods included the following:

- Cleaning of containment barriers was performed leaving critical barriers at openings, decontamination units and negative air filtration devices in place until results of post verification sampling indicate acceptable limits.
- Cleaning was performed from ceiling to floors.
- Any liquid used to wet the dust and debris to control fugitive emissions was collected and decontaminated in accordance with 40 CFR Part §761.79 (b)(l) or disposed of in accordance with §761.60 (a).
- All rags and other cleaning materials used to clean were also properly disposed as PCB Containing Waste.
- All PCB Remediation Waste was stored for disposal in accordance with 40 CFR Part §761.61(a) (5) (v) (A).
- All waste containers were appropriately marked in accordance with 40 CFR Part §761.40 and §761.45.
- Equipment utilized in connection with the removal of PCB Bulk Product Waste, including waste collection or that came in direct contact with the site contaminants were decontaminated prior to leaving the site to prevent migration of the contaminated residues from the project site.
- Decontamination was conducted in accordance with 40 CFR Part §761.79 and Sub-part S procedures.
- All non-disposable equipment and tools employed in the course of the project were decontaminated at the conclusion of each work day through the following sequence:
    1. Initial tap water rinse, to remove gross soil
    2. Hexane or equivalent wash
    3. Tap water rinse
    4. Second Hexane or equivalent wash
    5. Second tap water rinse
- The wash water and decontamination liquids were captured and containerized in DOT approved 55-gallon barrels for off-site disposal.

9.6 Waste Disposal

All waste containers were marked with the name of the waste contained; the date in which the first material was placed in the vessel; and the last date at which addition of waste occurred. All waste containers were marked with a PCB ML marker

All waste containers containing PCB Bulk Product Waste, and PCB contaminated debris, containment system components, used personnel protective equipment, personal and equipment wash water and decontamination fluids, or other wastes generated during the abatement work were packaged and labeled as follows:

DOT Class 9 UN3432 (solid)
Or UN2315 (liquid) PCB Waste
RQ
Waste for Disposal

Federal law prohibits improper disposal.
If found, contact the nearest police or public safety authority or
the U.S. Environmental Protection Agency.

a. Generator's Information:_____
b. Manifest Tracking No.: _____
c. Accumulation Start Date: _____
d. EPA ID No.: _____
e. EPA Waste No.: _____
f. Total Weight: _____
g. Container No.: _____

HANDLE WITH CARE!

All solid waste material, containment system components, used personnel protective equipment, and other solid wastes generated during the work, were placed directly in appropriate waste receptacles immediately upon removal from its in-situ position. Suitable waste receptacles consisted of roll-off containers or DOT-approved 55- gallon barrels.

- The Contractor was responsible for all packaging, labeling, transport, disposal and record-keeping associated with PCB or PCB contaminated waste in accordance with all federal, state and local regulations.
- The Contractor ensured that the person transporting the waste held valid permit issued in accordance with appropriate federal, state, and local regulations.
- The Contractor provided to the transporter at the time of transfer appropriate shipping records or uniform waste manifests as required by the federal, state and local regulations with a copy to the Owner and Owner's Authorized Representative. Refer to Appendix _, for a copy of waste shipment documentation.
- The Contractor maintained proper follow up procedures to assure that waste materials were received by the designated waste site in a timely manner and in accordance with all federal, state and local regulations.
- The Contractor shall assure that disposal of polychlorinated biphenyls (PCB) containing waste material is at a facility approved to accept such waste and shall provide a tracking/manifest form signed by the landfill's authorized representative.
- Properly containerized waste with PCB >50 ppm was transported by a licensed hauler and shipped as PCB Bulk Product Waste for disposal at a permitted facility for PCB waste 50 ppm.
- Any PCB Liquid Water Waste was properly containerized and decontaminated in accordance with 40 CFR Part 761.79 (b)(1) or disposed of in accordance with 40 CFR Part 761.60 (a).
- Any chemicals, solvents or other products used during decontamination were properly containerized as PCB Liquid Waste. Waste must be properly decontaminated or disposed in accordance with 40 CFR Part 761.60 (a) or 40 CFR Part 761.79 (g).

10 Conduct Post Removal Air and Wipe Sampling

10.1 Post Removal Sampling

Upon completion of work to remove or encapsulate source materials, work areas were thoroughly cleaned and representative wipe samples for PCB were collected within each room on non-porous floor and porous window sills. HVAC systems were cleaned and balanced and run for a period of 12 hours in addition to continued ventilation with HEPA equipped negative air filtration devices. Post removal indoor air samples were collected for analysis using Method TO-10A Homolog analysis. Samples were collected in all classrooms and function spaces at the request of WCS and WPSC. Work was conducted in phases as each work area was completed.

Results of indoor air samples in general were initially below EPA guidance of 300 ng/m^3. If a room or group of rooms were above the guidance criteria, the rooms were re-cleaned and ventilated for a period and then re-sampled. On September 6, 2011 all classrooms and Media Center with few exceptions were below the EPA guidance and school opening was allowed on September 8, 2011 after a two day delay to allow maintenance staff and teachers time to prepare rooms for use. Areas which did not initially fall below EPA guidance included Cafeteria, Kitchen area, Office area and few isolated rooms off media center, and Room 24. These areas were subjected to additional cleaning and ventilation for several weeks resulting in opening of the Cafeteria, Kitchen and most offices.

Continued review and interim measures including removal of carpeting in several rooms was conducted to attempt to lower indoor air in these few isolated locations which were not in use. These areas included Principals Office, two guidance offices, room 24, and three offices within the media center. These locations were above the EPA guidance of 300 ng/m^3. The locations have a lack of ventilation and efforts to force ventilation using air scrubbing devices have not resulted in lowering of indoor air to below EPA guidance for children. The areas are either not utilized or are restricted to teachers and office staff since results do not exceed 450 ng/m^3.

As part of the on-going management of PCBs within the building, quarterly indoor air sampling was required. The first round of indoor air samples was conducted on November 17, 2011. Locations were collectively chosen by the school, parents and teachers and represented approximately 25% of the school building. We continued sampling quarterly (school calendar year) and varied the locations to ultimately ensure a second round of testing in each of the locations sampled in August / September after removal work occurred. Analytical results for the post removal air sampling as well as the quarterly can be seen below in tables 14 – 17.

Refer to ***Appendix U, V and W*** for post remediation laboratory analysis results.

11 Conduct Quarterly Sampling

The on-going management of PCBs within the building required quarterly indoor air sampling and wipe sampling which has been conducted. The first round of indoor air and wipe samples was conducted on November 17, 2011, second round on January 23, 2012, third round March 29, 2012 and fourth round on June 9, 2012. Locations were collectively chosen by the school, parents and teachers and represented approximately 25% of the school building during each round with completion of 100% of all classrooms and program spaces upon completion.

11.1 Round 1 25% of Building

Table 14
First Quarter Post Remediation PCB Air Sample Results Summary
Collected on: 11/17/2011

Westport Middle School
400 Old County Road
Westport, MA
Report Date: 11/29/2011

Location	Last Result Nanograms/m^3	Date	Current Result Nanograms/m^3	Date	EPA Threshold Nanograms/m^3
Kitchen	180	9/18/2011	120	11/17/2011	300
Cafeteria (side A by offices)	160	9/18/2011	110	11/17/2011	300
Cafeteria (side D by 283)	190 210(duplicate)	9/18/2011	120	11/17/2011	300
Room 283	220	9/9/2011	170	11/17/2011	300
Room 278	100	8/29/2011	13	11/17/2011	300
Room 275	81	8/29/2011	31	11/17/2011	300
Room 263	140	9/18/2011	72	11/17/2011	300
Library (Media Center)	180	9/2/2011	120 100 (duplicate)	11/17/2011	300
Room 238	180	8/31/2011	100	11/17/2011	300
Nurse's Office	Non Detected	9/2/2011	200	11/17/2011	300
Room 108	84/81	9/7/2011	30	11/17/2011	300

Location	Last Result Nanograms/m^3	Date	Current Result Nanograms/m^3	Date	EPA Threshold Nanograms/m^3
Room 107	73	9/7/2011	49	11/17/2011	300
Room 171	98	9/7/2011	120	11/17/2011	300
Room 166	170	9/1/2011	31	11/17/2011	300
Room 163	92	8/26/2011	7	11/17/2011	300
Room 122	190	8/30/2011	42	11/17/2011	300
Room 120	250	8/30/2011	97	11/17/2011	300
Gymnasium	170	9/2/2011	37 29 (duplicate)	11/17/2011	300
Boy's Locker Room	Non Detected	9/1/2011	41	11/17/2011	300
Girl's Locker Room	110	9/9/2011	43	11/17/2011	300
Rooms where last known results over 300 and current results					
Room 24	**1500**	**9/13/2011**	**550**	**11/17/2011**	**300**
Room 256	**400**	**9/18/2011**	**390**	**11/17/2011**	**300**
Principal Office (Room 220)	**360**	**10/18/2011**	**410**	**11/17/2011**	**300 or 450 for adults**

11.2 Round 2 25% of Building

Table 15
Second Quarter Post Remediation PCB Air Sample Results Summary
Collected on: 1/23/2012

Westport Middle School
400 Old County Road
Westport, MA
Report Date: 1/30/2012

Location	Last Result Nanograms/m^3	Date	Current Result Nanograms/m^3	Date	EPA Threshold Nanograms/m^3
Room 103	230	8/31/2011	0 & 3 (duplicate)	1/23/2012	300
Room 106	290	8/31/2011	39	1/23/2012	300
Room 112	230	8/31/2011	66	1/23/2012	300

Location	Last Result Nanograms/m³	Date	Current Result Nanograms/m³	Date	EPA Threshold Nanograms/m³
Room 121	180	8/30/2011	57	1/23/2012	300
Room 124	39	8/30/2011	24	1/23/2012	300
Room 154	310	8/26/2011	38	1/23/2012	300
Room 164	94	8/26/2011	22	1/23/2012	300
Room 167	170	9/1/2011	30	1/23/2012	300
Room 175	190	8/31/2011	21	1/23/2012	300
Room 239	140	8/31/2011	160	1/23/2012	300
Room 241	180	8/31/2011	81	1/23/2012	300
Room 258	200	9/1/2011	140	1/23/2012	300
Room 274	120	8/29/2011	55	1/23/2012	300
Room 277	90	8/29/2011	22	1/23/2012	300
Small Gym	77	9/1/2011	11	1/23/2012	300
Auditorium	280	9/2/2011	18 & 23 (duplicate)	1/23/2012	300
ISS room (used as Principals office)	350	10/24/2011	110	1/23/2012	300
Principal office (yet to clear)	**410**	**11/17/2011**	**320**	**1/23/2012**	**300**

11.3 Round 3 25% of Building

Table 16
Third Quarter Post Remediation PCB Air Sample Results Summary
Collected on: 3/29/2012

Westport Middle School
400 Old County Road
Westport, MA
Report Date: 4/6/2012

Location	Last Result Nanograms/m³	Date	Current Result Nanograms/m³	Date	EPA Threshold Nanograms/m³
Room 105	120	8/31/2011	5	3/29/2012	300
Room 102	180	8/31/2011	100	3/29/2012	300
Room 110	80	9/7/2011	66/72	3/29/2012	300
Room 125	110	8/30/2011	170	3/29/2012	300
Room 168	210	9/1/2011	160	3/29/2012	300

Location	Last Result Nanograms/m^3	Date	Current Result Nanograms/m^3	Date	EPA Threshold Nanograms/m^3
Room 118	293	8/26/2011	150	3/29/2012	300
Band Room	67	9/2/2011	84	3/29/2012	300
Special needs by Rm 101	170	9/1/2011	Not Collected	3/22/2012	300
Room 237	240	8/31/2011	120	3/29/2012	300
Room 242	210	8/31/2011	110	3/29/2012	300
Room 250/251	**290**	**9/9/2011**	**340**	**3/29/2012**	**300**
Room 256	390	11/17/2011	220	3/29/2012	300
Room 257	360	9/1/2011	190	3/29/2012	300
Room 264	180	8/29/2011	160	3/29/2012	300
Room 279	Not Detected	9/2/2011	150	3/29/2012	300
Main office	630	9/9/2011	100	3/29/2012	300
Sec. Office	Not Collected	9/9/2011	240	3/29/2012	300
Assistant Principal office	**350**	**10/24/2011**	**400**	**3/29/2012**	**300**
Guidance 1 office	**410**	**11/17/2011**	**330**	**3/29/2012**	**300**
Kitchen food store	120	11/17/2011	42	3/29/2012	300
Principal's Office (Rm 220)	**320**	**1/23/2012**	**400**	**3/29/2012**	**300**
Room 24	330	12/16/2011	280	3/29/2012	300

11.4 Round 4 25% of Building

Table 17
Fourth Quarter Post Remediation PCB Air Sample Results Summary
Collected on: June 9, 2012

Westport Middle School
400 Old County Road
Westport, MA
Report Date: 6/14/2012

Location	Last Result Nanograms/m^3	Date	Current Result Nanograms/m^3	Date	EPA Threshold Nanograms/m^3
Room 101	120	8/31/2011	58	6/9/2012	300
Room 104	110	8/31/2011	100	6/9/2012	300
Room 104 (Duplicate)	NA	NA	97	6/9/2012	300
Room 172	120/290	8/31/2011	69	6/9/2012	300
Gym custodial. Rm	180	8/30/2011	47	6/9/2012	300
Room 235	39	8/30/2011	110	6/9/2012	300
Room 249	**350**	**9/9/2011**	**400**	**6/9/2012**	**300**
Room 254	**170**	**9/19/2011**	**330**	**6/9/2012**	**300**
Room 259	170	9/1/2011	180	6/9/2012	300
Room 268	340	9/1/2011	250	6/9/2012	300
Room 268 (Duplicate)	420	9/1/2011	240	6/9/2012	300
Room 280	160	8/29/2011	150	6/9/2012	300
Guidance 2 office	180	8/31/2011	160	6/9/2012	300
coffee office room	200	9/1/2011	130	6/9/2012	300
staff room	120	8/29/2011	430	6/9/2012	300
Custodian office off loading dock	90	8/29/2011	180	6/9/2012	300
storage + load dock	77	9/1/2011	160	6/9/2012	300
Custodian area load dock	280	9/9/2011	260	6/9/2012	300
Kitchen locker Room	350	10/24/2011	NA (blocked off)	6/9/2012	300
kitchen office	410	11/17/2011	NA (blocked off)	6/9/2012	300
Blank	NA	NA	0	6/9/2012	300

Refer to ***Appendix X*** for quarterly laboratory analysis results.

Wipe samples were collected within rooms where indoor air sampling was conducted. Samples were randomly collected on horizontal surfaces to determine PCB concentrations in any settled dust. Typically 3-4 samples were collected on floors, furniture or other surfaces. In addition, per request of EPA, samples were collected on encapsulated ceilings.

See ***Appendix Y*** for quarterly wipe sample analytical results.

11.5 Quarterly Testing Summary

In general, the quarterly testing documented that the removal of sources of PCBs during the summer work improved indoor air quality as results continued to be below EPA guidance threshold of 300 ng/m^3. Many results demonstrated that indoor air samples continued to be lower over time. Each table identifies results taken after summer work and each quarters result. Exceptions include several locations within the Office area of the building and Room 24. Continued testing within these areas did not identify results to decrease and some were still over 300 ng/m^3. Room 24 was evaluated for additional primary sources of PCBs. Paint on walls was considered a possible secondary source of PCBs as walls were painted by Maintenance staff less than five years prior to remediation work. Samples collected of paint identified PCBs > 50 ppm. Wall surfaces were encapsulated using product used elsewhere within school. Measurements of indoor air within the room after encapsulation were reduced to below 300 ng/m^3.

12 Interim Measures and On-Going Management and Sampling

12.1 Indoor Air Sampling

Following the post remediation indoor air sampling EnviroScience conducted quarterly sampling and results indicate removal of PCB Bulk Products have allowed for continued safe occupancy of the school building and maintaining results of indoor air consistently below EPA guidance of 300 ng/m^3. WCS shall perform quarterly monitoring during school year 2012/2013.

The samples will be collected and analyzed per the requirements of EPA Method TO- 10A and analyzed for Homolog's. It is anticipated that indoor air samples will conducted until such time is additional remediation to remove secondary sources of PCBs from adjacent materials is conducted as well as removal of remaining PCB Bulk Products in identified locations.

12.2 Ceiling Encapsulant Monitoring

Following application of the Fiberlock asbestos coating, inspections of each area of application should be completed on an annual basis, in conjunction with indoor air sampling. The inspections will consist of visual observations to determine if there are any observable breaches or failures to the coating. Any observed breaches in the integrity of the coating will be documented and repairs will be made within one week. The repairs will also be documented. Surface wipe samples will be collected from the surface of the coatings to verify containment of PCB. The wipe samples will be collected in accordance with 40 CFR 761.123. The sampling will include a

duplicate sample and a blank for QA/QC. The quantity and frequency of sampling may increase based on results.

The following is recommended for subsequent annual wipe sampling.

- 20 wipe samples from the coating on the interior ceiling surfaces are to be collected on an annual basis.

12.3 Best Management Practices

Exposure to potential PCB containing materials can greatly be reduced by implementing some simple Best Management Practices. The custodial and teaching staff at Westport Middle School have been trained on implementing the following simple, yet effective tasks, to reduce student/staff potential exposure to PCBs. This list should be reviewed and updated as necessary.

- Have students and faculty wash hands with soap and water frequently.
- Use of vacuums with HEPA filters. This practice is already in effect and has been so upon the discovery of PCBs at the school.
- Clean areas of dust accumulation more often. For example, these areas include window sills, floor intake vents for the unit ventilator, corners, hard to reach areas.
- Avoid dry dusting, mopping or sweeping. Use wet cloth's or HEPA vacuuming to clean surfaces.
- Improve ventilation. The unit ventilators were adjusted and maintained for optimum performance and should not be not be "tinkered" with by teaching staff. The storage of materials on top of the unit ventilator vents should be avoided. Filter changes (per manufacturer's recommendations or more frequent if dusty conditions require) and 1/4ly removal of dust with a HEPA vacuum should occur.

13 Data Validation and Usability

13.1 Modified Tier I Data Review

EnviroScience conducted modified Tier I data verification of the field and analytical data resulting from the assessment documented herein. Modified Tier I verification narratives checklists are included for each set of Con-Test reports in ***Appendix Z.***

The analytical data is compliant with the data quality objectives.

14 PCB Operations and Maintenance Plan

14.1 Purpose and Intent

EnviroScience has prepared an Operations and Maintenance (O&M) Plan based on the completed work to remove significant sources of PCBs from the school in 2011. Some specific areas of PCBs could not be removed due to the difficulty in completing the work within the specific time allowed prior to occupancy in September 2011. The building is continuing to be monitored for PCBs utilizing indoor air sampling and wipe sampling. The current status of known PCBs within the interior and exterior of the building is as follows:

PCB Bulk Product Waste Materials Remaining

- Tectum ceiling panels with PCB mastic and felt remain within the following locations:
  - Stairwells
  - Loading Dock, Storage area, Custodial Office, and kitchen area
  - Top of walls
  - Above ceiling mounted unit ventilators
- Interior and exterior door caulking at building entrance doors containing PCB exist above door height to roof line.
- PCB Glazing compound associated with all window systems remains and as an interim measure is covered by new silicone caulking to prevent contact.
- PCB mastic adhesive on exposed ceilings is limited to very small percentage of ceiling area and is encapsulated with an asbestos bridging encapsulant.
- Secondary sources of PCB in paint in Room 24 remain and have been encapsulated.

PCB Remediation Wastes Identified and Remaining

- Porous brick on exterior jambs and sills adjacent to window systems contains >1 ppm PCB.
- Porous concrete on exterior beams adjacent to window systems contains >1 ppm PCB.
- Porous brick on interior jambs and sills adjacent to window systems contains >1 ppm PCB.
- Porous concrete on interior columns and beams adjacent to window systems contains >1 ppm PCB.
- Porous brick on interior expansion joints contains >1 ppm PCB, caulking has been removed and prior to installation of new caulking encapsulant was applied to the interior brick.
- Soil in limited locations has been identified to contain PCBs > 1 ppm.

This O&M Plan reflects the controls necessary for PCBs identified during previous inspection work and identified as remaining after the work in 2011.

The general intent and purpose of an O&M program is to ensure continued health & safety of building occupants as well as maintenance staff and outside contractors who may come into contact with PCB containing materials. In order to provide this assurance the following must be implemented:

1. Establish procedures to recognize, control and mitigate potential PCB hazards and inadvertent disturbance of PCBs.
2. Ensure worker safety in accordance with occupational safety and health regulations pertaining to PCBs.
3. Establish process for review of proposed maintenance activities and or work of outside contractors or vendors to determine potential of work to disturb PCBs.
4. Identify general work practices where contact with PCB materials or potential PCB contaminated dust or debris may be present.
5. Establish goals to maintain indoor air and dust concentrations for PCBs in accordance with health standards for continued occupancy.
6. Maintain proper ventilation systems within the building.
7. Identify procedures for reporting observances of conditions where PCB materials have become disturbed and special response procedures.
8. Identify testing schedules and frequency for verifying indoor air and dust concentrations within the building.
9. Identify training of maintenance staff and awareness of public through outreach activities and reporting.
10. Ensure any future planned renovations or other possible disturbance of PCBs are properly designed and conducted by appropriately trained contractors with workers experienced in handling of PCBs.

14.2 PCB Coordinator

A comprehensive PCB control program starts with the appointment of an PCB Coordinator and an PCB Consultant. It is also advisable to retain a PCB Remediation Contractor to handle emergency response action(s).

PCB related work shall take place only with the PCB Coordinator's knowledge; this includes abatement contractor's activities. Emergency situations will be brought to his/her attention as soon as possible after the fact. The PCB Coordinator is the Person who will have overall responsibility for the Operations and Maintenance Plan.

The PCB Coordinator's responsibility shall include coordination with the PCB Consultant and the PCB Remediation Contractor, documentation of response actions, communication with building occupants (where applicable), communication with outside contractors or vendors working at Westport Middle School, ensuring compliance with training of maintenance and custodial employees and periodic visual inspection of PCB materials present in the building and record keeping.

15 Long Range Plan Scenarios for Remediation and Goals

15.1 Renovation Plans

Any proposed removal or renovation potentially involving building materials suspected of containing PCB should be evaluated by the School District. If required to be completed, this should be performed by trained personnel.

Capital plan summary:

Westport Community Schools has been able to get the town and the Massachusetts School Building Authority to support some improvements to our districts school buildings. In Fiscal Year (FY 2013), we were able to complete the replacement of the Macomber School and the High School roofs. These projects came in under budget although it took longer to complete than anticipated. We asked the Town for $2.5 million to replace the roofs and the windows of the Middle School in FY 12. Unfortunately the engineering design phase indicated that the roofs at MAC and WHS would actually use up the $2.5 million allocated to the projects. The projects, thankfully came in at a little over $1 million.

In addition the architect Project team found PCBs in the caulk around the windows and in the glue holding up the sound panels on the ceilings of most of the school. At a cost of $3.2 million, the partial clean-up was very expensive and left us with a school that has to be monitored on a quarterly basis year to year to ensure PCB air and wipe samples remain below the thresholds that the EPA finds acceptable for middle school aged students.

The School Committee and the Board of Selectmen have been asked to support a plan to study and perhaps implement a plan to expand the HS and the Macomber schools in order to allow the schools to abandon the use of the middle school building as a school and renovate the old parts of WHS and Macomber and the Westport

Elementary School (WES). The ultimate plan would be to have the expanded schools to accept a redistributed set of grades so that the Macomber School would become the Macomber Elementary School with grades (PK-3), and the WES would become the Westport Intermediate School with grades (4-6) and the Westport High School would become the Westport Junior/Senior High School with grades (7-12).

A proposed possible schedule is as follows:
FY 14 = Plan Capital Improvements
FY 15 = Expand MACOMBER and WHS
FY 16 = Renovate WES and the old parts of MACOMBER/WHS
FY 17 = Macomber Elementary (PK-3), Westport Intermediate School (4-6) and Westport Jr. /Sr. High School (7-12)

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Appendix A

INITIAL INSPECTION REPORT – 5/11/2011

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Appendix B

SUBSTRATE SAMPLING RESULTS AND CHAIN OF CUSTODY

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Appendix C

SOIL SAMPLING RESULTS AND CHAIN OF CUSTODY

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Appendix D

INITIAL WIPE SAMPLING RESULTS AND CHAIN OF CUSTODY

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Appendix E

INITIAL AIR SAMPLING RESULTS AND CHAIN OF CUSTODY

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Appendix F

ADDITIONAL WIPE SAMPLING RESULTS AND CHAIN OF CUSTODY - 6/27/2011

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Appendix G

ADDITIONAL BULK SAMPLING RESULTS AND CHAIN OF CUSTODY – 6/27&29/2011

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Appendix H

PILOT PRE-CLEANING WIPE SAMPLING RESULTS AND CHAIN OF CUSTODY - 7/22/2011

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Appendix I

PILOT BASELINE AIR SAMPLING RESULTS AND CHAIN OF CUSTODY 7/23/2011

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Appendix J

PILOT BASELINE WIPE SAMPLING RESULTS AND CHAIN OF CUSTODY - 7/23/2011

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Appendix K

PILOT POST REMOVAL AIR SAMPLING RESULTS AND CHAIN OF CUSTODY - 7/27/2011

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Appendix L

PILOT POST REMOVAL WIPE SAMPLING RESULTS AND CHAIN OF CUSTODY - 7/27/2011

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Appendix M

DOCUMENT TO OBTAIN QUOTES

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Appendix N

ASBESTOS PROJECT MONITOR LICENSES

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Appendix O

CERTIFICATE OF FINAL VISUALS

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Appendix P

SITE LOGS

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Appendix Q

Contractor Sign-In Logs

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Appendix R

DAILY MONITORING DATA